

### **REMARKS**

In the Office Action, claim 11 was objected to because of certain informalities. Claims 1, 2, and 6 were rejected under 35 U.S.C. § 102(e) as being anticipated by Beauchamp et al., (U.S. Patent 6,434,441, hereinafter "Beauchamp"). Claims 11-20 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Dickerson et al., (U.S. Patent 6,625,507, hereinafter "Dickerson") in view of Kenworthy et al., (U.S. Patent 5,808,617, hereinafter "Kenworthy") and Chetta et al., (U.S. Patent 6,587,741, hereinafter "Chetta"). Claims 1, 3-5, and 7-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Beauchamp in view of Kenworthy and Chetta. By the present Response, claim 11 has been amended. Upon entry of the amendments, claims 1-20 will be pending in the present patent application. Reconsideration and allowance of all pending claims are requested.

### **Claim objections due to informalities**

In the Office Action, claim 11 is objected to due to certain informalities. Claim 11 has been amended to obviate the objections raised in the Office Action. In particular, claim 11 has been amended to recite *executing an engineering* to obviate the objections. No new matter has been added. Thus, reconsideration and allowance of the amended claim are requested.

### **Rejections under 35 U.S.C. § 102**

Claims 1, 2, and 6 were rejected under 35 U.S.C. § 102(e) as being anticipated by Beauchamp.

Claim 1 recites a method for automatically analyzing an article of manufacture. In accordance with the method, a master model and a context model specification are provided. A context model is created from the master model and the context model specification. The context model is translated into an engineering analysis model compatible with an engineering analysis program. The engineering analysis program is

executed to generate a performance estimate from the engineering analysis model. The claim further recites optionally modifying the master model to improve the performance estimate.

As set forth in lines 10-22 of page 3 of the present application, the master model is read from an initial storage medium into the CAD program. A user determines a specified portion of master model (called the "context model specification") to be copied into an associative model (called the "context model") and prepared for engineering analysis. "Associative," as used herein, means that there exists a master-slave relationship between the master model and the context model. In other words, the master model is abstracted to a level of detail necessary to perform a specified engineering analysis (e.g., the necessary detail may comprise a specific part of a larger design assembly).

With respect to Beauchamp, FIG. 1 of this reference illustrates defining *customer requirement parameters* for the part. Customer requirements are defined as specific values or constraints of the customer requirement parameters on the overall performance of a part which the part is expected to meet. This reference does not describe determining a *specified portion of the master model* to be copied into the context model. The customer requirement parameters for the part are simply defined and not modeled. That is, simple requirement parameters are not equivalent to a master or context model.

As set forth at page 3, lines 23-29 of the present application, the context model is translated into an engineering analysis model compatible with an engineering analysis program. Typical engineering analysis programs, for example, provide algorithms for the solution of mechanical stress, heat transfer, modal analysis, buckling, and computational fluid dynamics problems. For example, an algorithm for the solution of mechanical stress in an engineering analysis program is used for analyzing a turbine disk rim exposed to high levels of stress.

With respect to Beauchamp, FIG. 4 of this reference illustrates a manufacturing enabler model defined as a computer model or representation usable within a computer aided design software in which a hardware component specific to the manufacturing process for the particular part is described in terms of features (holes, lines, curves, chamfers, blends, radii, etc) and dimensional parameters associated with these features which at any given time take on specific numerical values. Here again, the reference does not describe *translating the context model into an engineering analysis model* compatible with an engineering analysis program.

Applicant respectfully submits that in view of these distinctions, Beauchamp cannot anticipate claim 1. Accordingly, Applicant respectfully submits that independent claim 1 and claims depending therefrom are allowable, and respectfully request the Examiner to reconsider the rejection of these claims.

**Rejections under 35 U.S.C. § 103**

**Claim 1 and the claims depending therefrom**

The Examiner rejected independent claim 1 and its dependent claims under 35 U.S.C. §103(a) as unpatentable over Beauchamp in view of Kenworthy and Chetta.

Beauchamp is not available as prior art under section 103 with reference to present application. Beauchamp was filed on November 5, 1998 and issued on August 13, 2002. The present application was filed on June 30, 2001. Accordingly, Beauchamp is prior art only under 35 U.S.C. § 102(e). However, 35 U.S.C. §103(c) provides that such references are not available as prior art if they are commonly assigned at the time the later (the now claimed) invention was made. Beauchamp and the present application are commonly assigned or were under an obligation of

assignment to General Electric Company at the time of invention recited in independent claim 1.

Because Beauchamp is not available as prior art with reference to the present application, a *prima facie* case of obviousness for the independent claim 1 cannot stand. Thus, reconsideration and allowance of independent claim 1 and claims depending therefrom are requested.

**Claim 11 and the claims depending therefrom**

As noted above, claim 11 and its dependents were rejected in view of Dickerson, Kenworthy and Chetta. Claim 11 and the claims depending therefrom are allowable for the reasons mentioned below.

Claim 11 recites a method for automatically analyzing a turbine engine disk. In accordance with the method, the turbine disk CAD model is loaded from a database. A geometric description of a region of interest is acquired from the user. A context model is created from the geometric description and the CAD model by trimming, tagging and chunking. A mesh is generated from the context model. The mesh is used to execute an engineering analysis program to generate a performance estimate. The method further recites optionally modifying the turbine disk CAD model to improve the performance estimate.

As described above, with respect to the present application, a user determines a specified portion of master model (called the "context model specification") to be copied into an associative model (called the "context model") and prepared for engineering analysis.

With respect to Dickerson, FIG. 2 of this reference illustrates a graphical user interface (GUI) that displays, for example, a simplified model of low pressure turbine

shaft system with an attached stub-shaft and shaft hub. As shown in the GUI screen in FIG. 2, the buttons labeled file, Edit, Create Analysis, Info and View roughly indicate the usual logical steps in the design process for developing the low pressure turbine shaft system model. This reference describes only that features *are visible in the GUI*, but not that the features are *subject of a specific context model* (which is a subset of the master model).

As set forth at page 4, lines 4-7 of the present application, the engineering analysis model, for example, is typically a finite model comprising a finite element mesh having material information parameters and loads and boundary conditions.

Moreover, with reference to Chetta, FIG. 5 of this reference illustrates additional performance measurements of stress calculated and displayed for each spline by the algorithm. The product model software program include a maldistribution factor, which indicates how well the spline coupling teeth mesh, a nominal tooth bearing stress measurement, and a maximum principal stress measurement. This reference describes only “tooth meshing” (see the passage relied upon by the Examiner), which bears no relation whatsoever to a finite element mesh. Thus, Chetta provides no reasonable teaching of such a mesh, as claimed.

Because Dickerson, Kenworthy and Chetta alone or in combination, fail to teach all of the recitations of claim 11, a *prima facie* case of obviousness of the independent claim 11 cannot be supported. Thus, reconsideration and allowance of independent claim 11 and claims depending therefrom are requested.

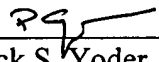
### **Conclusion**

In view of the remarks and amendments set forth above, Applicant respectfully requests allowance of the pending claims. If the Examiner believes that

a telephonic interview will help speed this application toward issuance, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

Date: 10/3/2005

  
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